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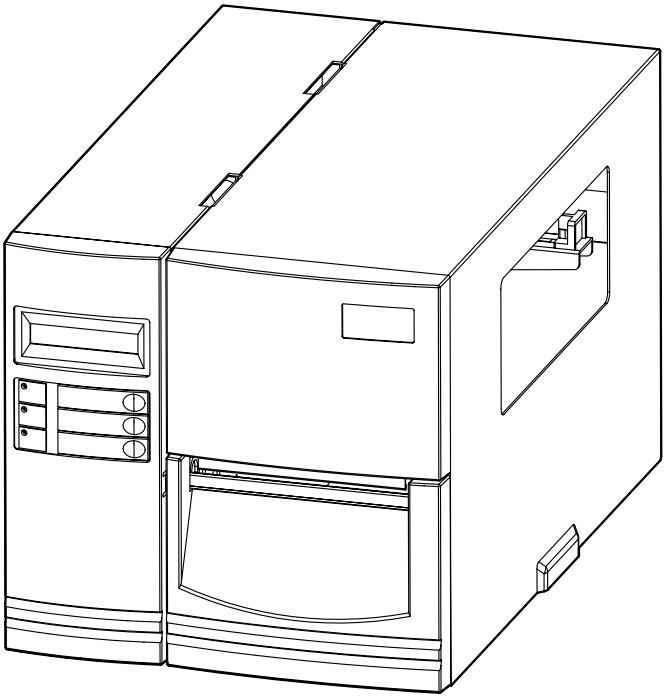

Cyclone Bar Code Label Printer

(Models C-1000/C-1000P)

User's Manual

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Printing History
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FCC Compliance Statement: This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For Users in the United States: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Use of a shielded cable is required to comply with the Class B limits of Part 15 of the FCC Rules. You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate and/or obtain warranty service for this equipment.

Within the U.S., this product is intended to be supplied by a UL Listed Direct Plug-in Power Unit marked Class 2 and rated 30 Vdc, 500 mA or 830 mA.

For Users in Canada: This digital apparatus does not exceed the Class B limits for radio noise for digital apparatus set out on the Radio Interference Regulations of the Canadian Department of Communications. Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

CAUTION!

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE. TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE EXTERIOR PANELS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL. OPERATE THE UNIT WITH ONLY THE PROPER ELECTRICAL SPECIFICATIONS AS LABELED ON THE PRINTER AND AC ADAPTER

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Section 1: Getting Started

THANK YOU...

…for purchasing the Cyclone C1000/C-1000P Bar Code Label Printer. Cyclone is a high-performance, low-cost direct thermal/thermal transfer label printer designed for use in most industrial, retail and office applications. Its user-friendly design and affordable price set a new standard of excellence for industrial-strength bar code label printers.

The printer incorporates a highly efficient memory management technology called *TrueSpeed*. This feature allows constant print speeds of 1″ to 4″ per second. The printer is bundled with flexible printer driver software and a highly capable label design program called PrimaBar™ for Windows®. Together, they allow you to quickly and easily print out bar codes, text and graphics using a standard PC running Windows 95/98/Me/2000 and NT. A wide variety of the most popular bar codes and 9 different fonts are also resident in the printer's internal memory for "legacy" applications in which a particular programming language is required.

The solidly designed mechanism delivers long life and allows quick and easy media and ribbon loading. Two Cyclone models are available:

- C-1000 – feeds labels out the front. An integrated tear-off bar is included.
- C-1000P – includes an internal rewind and peel-off mechanism.

The internal rewind and peel-off mechanism of the C-1000P allows dispensing of labels either out the front or one label at a time already peeled. Backing paper is re-wound inside the printer. This model can also rewind up to 1/3 of a roll of printed labels inside the printer with the backing paper still attached.

This User's Manual will help you understand basic operations of the printer such as set-up, installation, configuration and maintenance.

A. CHOOSING A GOOD LOCATION

- Place the printer in a location with adequate air circulation to prevent internal heat build-up.
- Do not place the printer near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Allow for adequate clearance in front of the printer to accommodate the labels coming out of the printer.
- Find a solid, flat surface with adequate room for the printer. Make sure there is enough room to open the side access door to change ribbons and media.
- The location should be as close as possible to your PC or terminal. Consider the distance between host and printer for the communication cable (serial or parallel cable). Especially for parallel cable connections, it is important to keep the cable as short as possible.
- Be sure to connect the power cord to a properly grounded power receptacle.

B. UNPACKING AND INSPECTION

To unpack your printer:

- The container should stay right side up.
- Lift the printer out of the box carefully.
- Remove any accessory items.
- Set the printer on a solid, flat surface.

While unpacking your printer, inspect the carton to ensure that no damage has occurred during shipping. Make sure that all supplied accessories are included with your unit. The following items should be included:

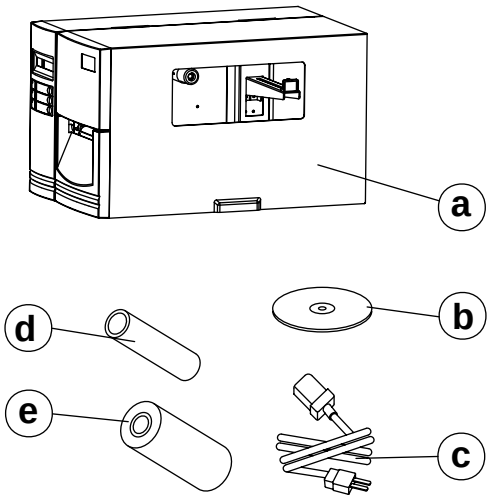
a. Printer

b. CD-R with printer driver software, PrimaBar Label Design Software for Windows 95/98/Me/2000/NT and Operator's Manual in Adobe Acrobat .pdf format. An Adobe Acrobat Reader is also included on the CD-R.

c. Power cord for either 100/110VAC or 220VAC

d. Extra ribbon core

e. Starter thermal transfer ribbon

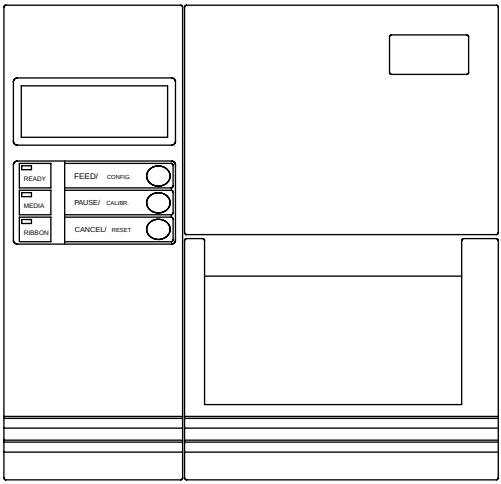


Save the carton and packing materials. They will come in handy when transporting the printer.

C. IDENTIFYING THE PARTS

Front Panel

The illustration below shows the printer's front panel:



The front panel includes:

- 3 LED indicators (READY, MEDIA and RIBBON)
- 3 buttons (FEED, PAUSE and CANCEL)

LED Indicators

There are three LED indicators on the front panel labeled "READY", "MEDIA" and "RIBBON". These indicators display the operational status of the printer.

READY	The READY indicator will remain lit except during the following conditions - The printer is in PAUSE state. - A fault condition has occurred.
MEDIA	The MEDIA indicator will remain lit except when the media (labels or ribbon) has run out.
RIBBON	ON – lit when using thermal transfer mode with ribbon installed. OFF – not lit when in direct thermal mode (no ribbon installed). Blinking – ribbon has run out.

Buttons

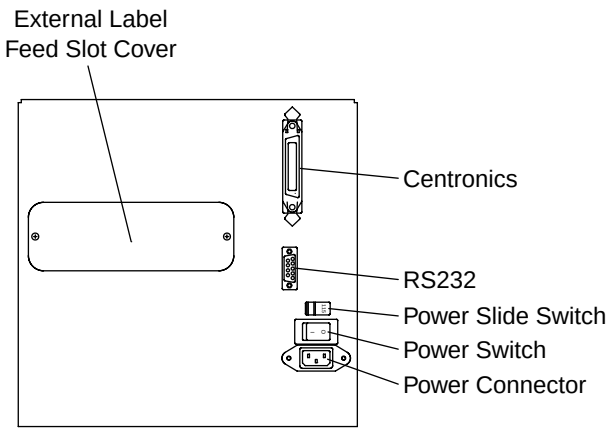
There are three buttons on the panel; each of them has at least two basic functions.

Button	*Under normal condition*	*Press the button and turn on the power simultaneously*
	Feeds a label.	Performs "self test" and prints out the configuration report.
	1. Stops the printing process. 2. Resumes printing after button is pressed again.	Performs media calibration.
	1. Interrupts and deletes the current print job. 2. Requests that the printer start again after an error has been solved.	Resets the settings at E2PROM.

Important Note: *It is highly suggested that you perform a media calibration using the Pause Button as described above:*
- after the first installation of labels.
- after you change to a different type or size of media

(Before calibration, the media and ribbon should be loaded properly and the label sensor moved to the correct position).

Rear Panel



The rear panel includes

- A Centronics-type parallel connector (36-pin)
- An RS-232 serial connector (9-pin)
- A Power Slide Switch
- A Power Switch and Power Connector
- An External Label Feed Slot with Cover

D. APPLYING POWER

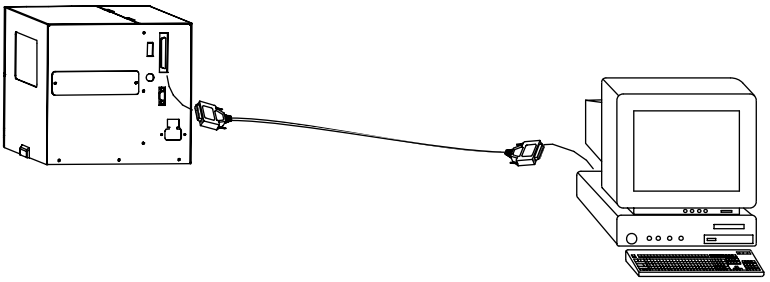
1. Make sure that the Voltage Selector Switch is in the correct position for your local power (120 VAC or 220VAC).
2. Leave the Power Switch in the off **("O")** position.
3. Connect the Power Cord to the printer and the other end to your AC power source.

E. CONNECTING THE PRINTER TO YOUR COMPUTER

The printer is designed to be used with nearly any Windows-based PC. Operating systems supported are Windows 95/98/Me and Windows NT/2000. The printer is equipped with a standard 8-bit Centronics-type parallel port. This port is used to receive data from your computer. To connect the printer, obtain a shielded, bi-directional parallel cable. An IEEE1194-compliant cable, not longer than 5 feet (1.5m) is highly recommended. Then, follow these steps:

NOTE: *For fastest possible printing, your computer's parallel port should be set to ECP mode. If you experience problems with this setting or if your computer's parallel port is not ECP compatible, set your computer's parallel port to the standard LPT Printer Port setting. Refer to your computer's system documentation for instructions on checking and/or changing the parallel port settings.*

1. Connect the Centronics-type parallel side of the cable to the printer. Snap the fastening clips into place.
2. Connect the other side to the back of your computer at LPT1, LPT2 or the PARALLEL connector.



3. Alternatively, you can connect the printer with a serial cable to the RS232C port of your computer or terminal (for PC compatibles, the RS232C port is COM1, COM2 or COM3).
4. In preparation for sending your first print job, the printer's power should now be turned on.

Note: *A Centronics-type parallel connection allows for a much higher communication speed than the use of RS232C serial.*

If you use the serial port with your own cable, refer to Appendix A and check the pin connection. Be sure that the speed (baud rate) and protocol are consistent between printer and host.

The factory default parameters of the serial port are:

Speed (baud rate)	9600
Data format	1 start bit, 8 data bits and 1 stop bit.
Parity	None
Handshaking (Flow control)	XON/XOFF as well as RTS/CTS

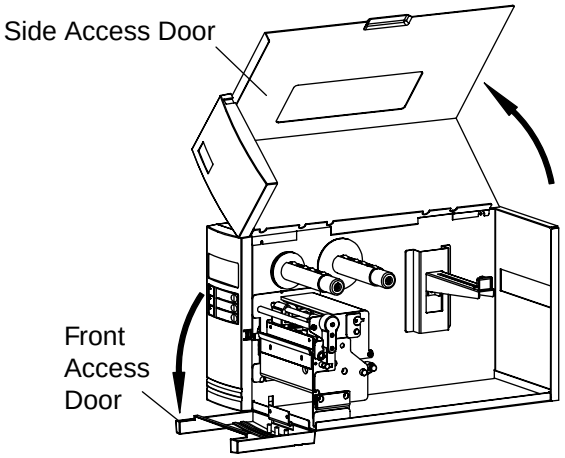
Notes: *1. It is not necessary to change any switches or send any commands for the parallel and serial port selection. The printer can automatically detect it.*

2. The default settings can also be read from the self- test page.

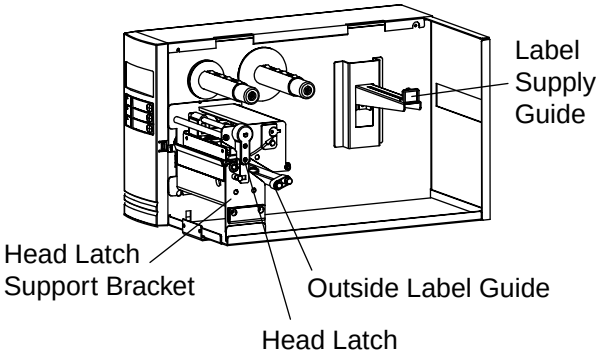
Section 2: Loading Media

A. LOADING LABELS OR TAGS

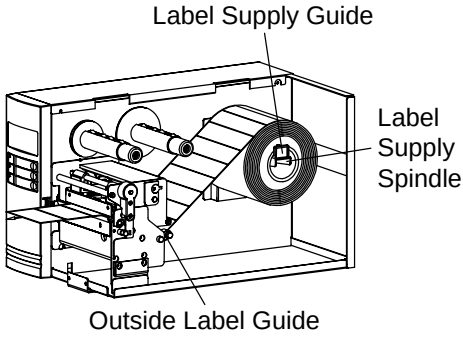
1. Open the **Side Access Door** by lifting it up and to the left and open the Front Access Door by pulling it forward and dropping it down.



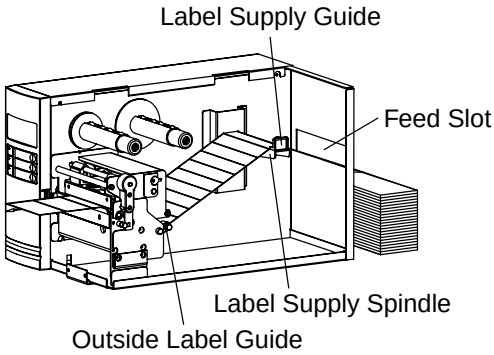
2. Open the print head module by pushing the **Head Latch** toward the rear of the printer. The print head module is spring-loaded and will automatically open as soon as the head latch is disengaged. Also drop down the **Head Latch Support Bracket**.



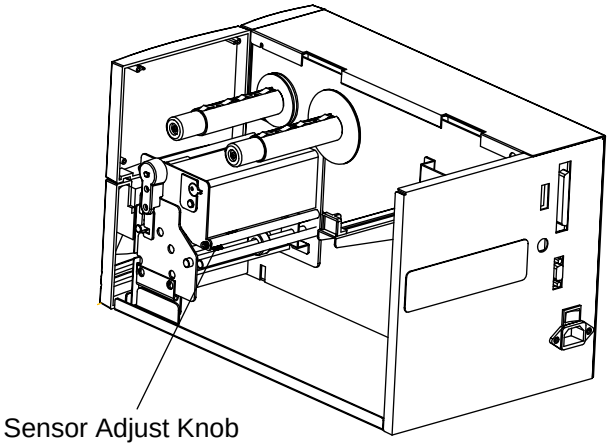
3. Move the **Label Supply Guide** to the outside of the printer. This allows the maximum label width to be fed through the machine.



4. Load the label roll onto the **Label Supply Spindle**. Make sure the print side of the labels faces upwards when you pull it towards the print head module. Push the roll all the way to the inside of the printer and push the **Label Supply Guide** snugly against the outside of the label roll. See diagram above for loading labels and the diagram below for loading tags. If using fan-fold tags, be sure to remove the **Label Feed Slot** cover before loading media. Fan-fold media must be stacked neatly behind the printer.



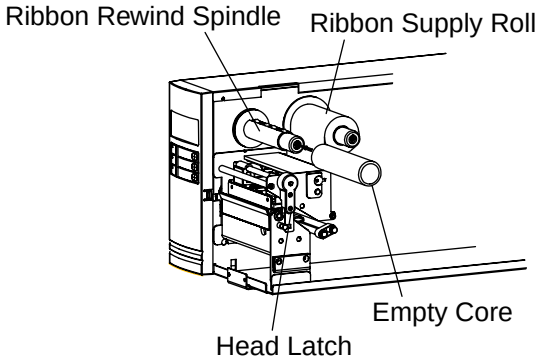
5. Move the **Outside Label Guide** to the outside of the printer to hold the maximum label width.
6. Inspect the label routing and verify that the path matches the illustration in the **Label Loading Diagram**. Move the **Outside Label Guide** inwards to keep the labels against the inside of the printer.
7. Check the **Sensor Adjust Knob**. Make sure its position is under the gap path during printing. Adjust it inwards or outwards if necessary.



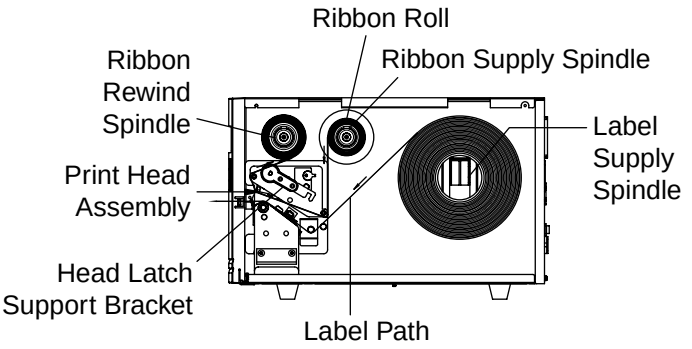
8. If the ribbon is already loaded or you just want to print with direct thermal mode, raise back the **Head Latch Support Bracket** and close the print head module by pushing downward on the **Head Latch**.

B. LOADING THE RIBBON

1. Open the **Side Access Door** by lifting it up and to the left.
2. Open the print head module by pushing the **Head Latch** toward the rear of the printer. The print head module is spring-loaded and will automatically open as soon as the Head Latch is disengaged. Pull down the **Head Latch Support Bracket**.
3. Locate the **Extra Ribbon Core** supplied with the printer. Place the core on the **Ribbon Rewind Spindle**, pushing it all the way to the inside of the spindle.

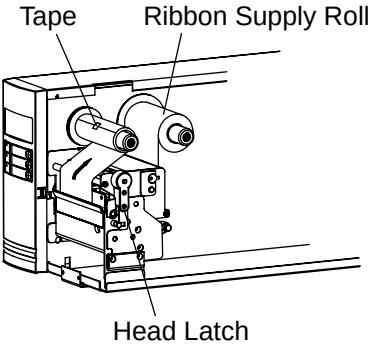


4. Load the ribbon onto the **Ribbon Supply Spindle**. The dull side of the ribbon should be facing down as it travels through the print head module.



5. Feed the leading portion of the ribbon through the **Print Head Assembly** and up to the **Ribbon Rewind Spindle** following the routing as shown in the diagram above. Be sure that the ribbon travels under the black plastic ribbon sensor.

6. To secure the ribbon on to the core, manually turn the rewind spindle twice. You may also choose to use a small piece of tape to hold the leading portion of the ribbons to the ribbon core.



7. If the media is already loaded, raise the **Head Latch Support Bracket** and close the **Head Latch** by pushing downward and close the **Side Access Door**.

Note: *The new empty core of each subsequent roll becomes the next rewind core.*

C. LABEL SENSOR CALIBRATION

After the ribbon and labels are loaded, it is necessary to perform a quick calibration procedure for the label sensor.

1. Turn off the printer. Press and hold the **PAUSE** button.
2. Turn on the power.
3. When the printer is in calibration mode, both the READY and the MEDIA LED indicators will blink. At this point release the button.
4. The printer will feed the labels for 12 inches.
5. When the READY and MEDIA LED indicators stop blinking and remain illuminated, the calibration is complete and the labels should feed properly between gaps.

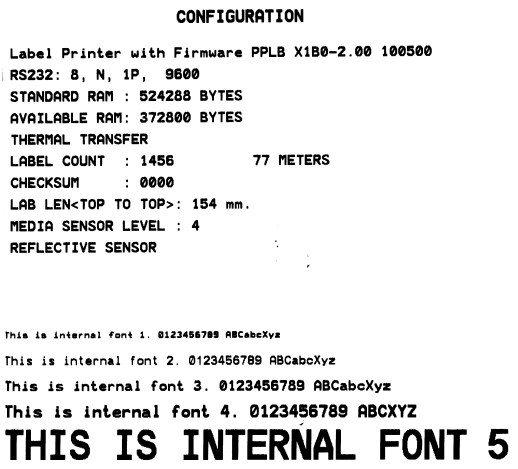
Note: *This procedure is very important to perform upon initial installation and every time thereafter that the media type is changed. Failure to do so will result in the gap and label-empty detection being incorrect.*

D. PERFORMING A SELF TEST

Before sending data to the printer, you may want to perform a Self Test to confirm that the printer itself is working properly.

1. Turn off the printer. Press and hold the **FEED** button.
2. Turn on the power.
3. The READY LED indicator will blink for few seconds.
4. The printer will print out a configuration report.
5. The READY LED indicator will stop blinking and stays lit.
6. The following information will be printed on this report.
   - Font list
   - Hardware configuration and status
   - Label parameters
   - Firmware version

Self Test Pattern



E. RESETTING THE PRINTER TO FACTORY DEFAULT CONDITION

If you would like to reset the printer to its factory defaults condition after certain commands have been sent or settings changed:

1. Turn off the printer. Press and hold the **CANCEL** button.
2. Turn on the power.
3. The READY LED indicator will blink for few seconds, then release the button.
4. The READY LED indicator will stop blinking and stays lit.
5. The following parameters automatically reset.
   - Label parameters
   - Heat (Darkness)
   - Speed
   - Symbol set (language)
   - Others various emulation settings

Notes: *1. It is necessary to perform label sensor calibration after resetting.*
2. The printed label count won't be reset.

Section 3: Using the Printer With Windows

A. INSTALLING THE PRINTER DRIVER

The supplied Windows printer driver is used for applications running under Windows 95/98/Me and Windows 2000/NT. You may use any popular software application as long as it runs under Windows and it is capable of printing to a standard Windows printer driver.

When you use the Windows printer driver, all fonts, graphics, bar codes and other label data are received in graphics bit-map mode from the PC, interpreted by the printer driver, and printed. This is the most convenient and easiest way to use the printer and is recommended for all new applications. You will have the full range of TrueType® fonts available to you for printing, opening up literally thousands of possible typefaces for your label designs. You'll also be able to use the many powerful Windows graphics and photo editing tools that are familiar to most computer users today. This section gives an overview of the specific printer driver options that you'll need to know about when printing under Windows.

Under the root directory of the CD there are several sub-directories

- WIN98/Me
- WIN95
- WIN2000
- NT4.0
- DOS
- UTILITY

Select the proper directory for installation according to your operating system.

Driver Installation

- Start Windows.
- Insert the printer driver CD-R (for Win 95/98/Me/2000 or NT) into your CD-ROM drive.
- For Windows 95/NT4.0:
  - Click the "Start" button.
  - Select "Settings", then "Printers"
  - Double click the "Add Printer" icon. Click "Next"
  - Specify the "Network" or "Local" button and click the "Next" button.
  - Select "Have Disk", enter the CD-ROM drive and path, e.g. D:**Cyclone Drivers.**
  - The driver name "**Label Dr. 200** will appear in the "List of Printers." Click "Next."
  - Select your desired operating system, e.g. WIN98. Click "OK".
  - Click "OK" again if necessary.
  - Select the communication port for the label printer. For select "LPT1:", "LPT2:" or "LPT3", for serial port select "COM1:" or "COM2:".
  - After the related files have been copied to your system, the procedure is complete.
  - If you need to print from the label printer you should set "Label Dr. 200" as the **Default Printer**.

Note: *If you are just updating your driver, make sure to delete the previous version first.*

B. HOW TO USE THE DRIVER

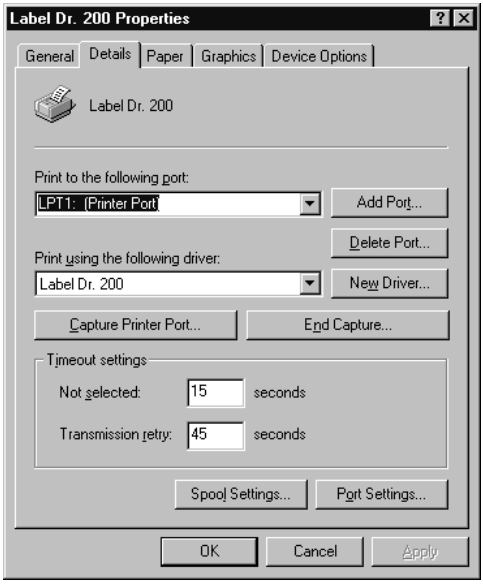
After the driver is installed, you can open the Label Dr. 200 dialogue box and make parameter settings through the same paths as mentioned above:

1. Windows 95/NT4.0 - Start > Settings > Printers > Label Dr. > Properties

Parameter setting:

After entering the Label Dr. 200 you can change the parameters to meet your configuration and needs.

Details



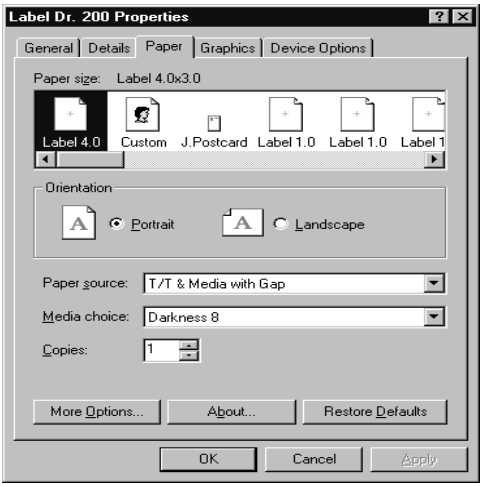
Print to the following port

This allows you to select the IO port to link with the printer. The port may be parallel (LPT or ECP), serial COM), network port or file. In most cases you should select ECP if it available. If not, select LPT.

If the communication port you select is serial (not recommended due to slow data transfer rates), COM1: or COM2:, check the baud rate and flow control as they must be consistent between host and printer. The printer's baud rate can be read from the self-test page. The factory default baud rate is 9600.

Using the Label Dr.

Paper



Select the paper size appropriate to the labels or tags you have installed. In most cases, it is easiest to select Custom and enter your own label height and width.

Or, select the label size from the list of pre-formatted sizes. The selected label size may be a little higher than that of the physical label.

Orientation

Set portrait or landscape according to the print direction.

Paper source

Select one of the following items:

T/T & Media with Gap
T/T & Media with Black Line
T/T & Continuous Media
D/T & Media with Gap
D/T & Media with Black Line
D/T & Continuous Media

T/T stands for thermal transfer (ribbon) mode and D/T for direct thermal mode (without ribbon).

Media choice

Set the heat value or darkness from this field. The darkness value ranges from 0 to 15.

Copies

This selection designates the number of printed copies of each page.

More Options

To use the cutter and peeler function you need to enter **More Options** and select one of the items:

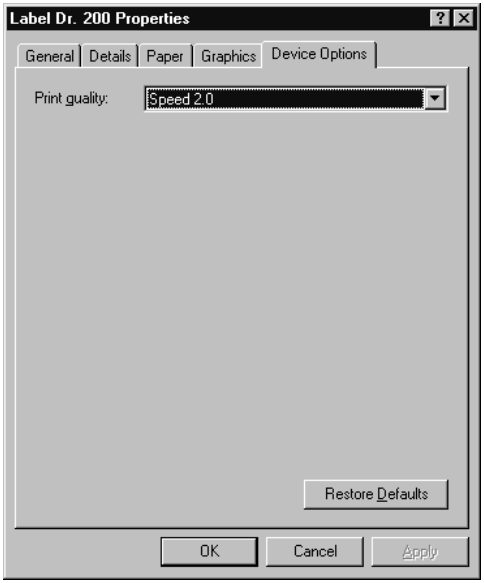
w/o Cutter and Peeler (default)

Cutter Enabled (a cutter is not currently available for the C-1000 or C-1000P)

Peeler Enabled

Device Options

Set the print speed. The speed is from 1 to 4 IPS.



After the driver is installed, you can open the Label Dr. 200 dialogue box and make parameter settings through the same paths as mentioned above:

Windows 95/98/Me/2000/NT4.0 - Start > Settings > Printers > Label Dr. > Properties

C. PRINTING LABELS

Now that you have hooked up your printer, loaded the labels or tags and ribbon, and installed the printer driver software, you are ready to print your first labels.

1. Go to your Windows-based label design program or install and launch the software included with your printer called PrimaBar for Windows.
2. Open or create the label file you wish to print.
3. Once you have opened or created the label you wish to print, select Print Setup (or the equivalent) from the program's File menu to verify that the printer driver settings are correct for your label size and print file. Be sure that the proper parameters such as speed, label gap setting and heat settings are correct for your type of media. Once these settings are correct, selet Print from the program's File menu. Enter the number of labels you wish to print in the Copies box.
4. The printer driver will begin to process your job. Depending upon the size of the image, the speed of your PC's processor and the amount of RAM you have in your PC, processing time can be either immediate or take several seconds.
5. Once processing is complete, the printer will begin to print. Print time depends upon the Print Speed selection you made in the Label Dr. 200 settings.

Congratulations! If everything has been done properly, you should have by now printed your first labels. Consult the remaining chapters of this manual for information on trouble-shooting, maintenance and connecting the printer to "legacy" systems.

Section 4: Troubleshooting & Maintenance

A. TROUBLESHOOTING

Generally, when a malfunction or an abnormal condition occurs, the "READY" LED will keep blinking and printing and communication between the host and printer will stop.

After the problems have been solved, press CANCEL to continue printing.

Problems with media

Blinking Indicators READY and MEDIA

Possible Problems	*Solutions*	*Remarks*
Missing gap	• Check the media path • Check the position of label sensor.	If you use continuous media, check your application software and driver. You should select **Continuous**.
Media out	• Supply the media roll	
Media not installed	• Install the media roll	
Media jam	• Fix the jam	

If everything is OK, perform a label sensor calibration.

Problems with ribbon

Blinking Indicators READY and RIBBON

Possible Problems	*Solutions*	*Remarks*
Ribbon has run out	Install a new ribbon	Does not apply to direct thermal.
Ribbon jam	Fix the jam	Not for direct thermal.
Ribbon sensor error	Replace the ribbon sensor	Not for direct thermal.

Other problems

Blinking Indicator READY

Possible Problems	*Solutions*	*Remarks*
SERIAL IO ERROR	• Inconsistent baud rate, format or protocol between host and printer • Check bits 6 ~ 8 of DIP switch. Refer to section 2 for DIP switch.	Not for Centronics
MEMORY FULL	• Check the graphics and soft fonts from host. • Make sure to delete the graphics and soft fonts if they are no longer used by the application software.	

Miscellaneous other problems

- *The data has been sent, but there is no output from the printer.*
  - Check the active printer driver, it should be Label Dr. 200 for your Windows system and the label printer.
  - Check the emulation and the print (command) file.
- *Vertical streaks in the printout usually indicate a dirty or faulty print head.*
  - Clean the print head first, if they still persist, replace the print head.
- *Unstable ribbon roll rotation.*
  - Check the label path and make sure the head latch is securely closed.
- *Poor printout quality.*
  - The ribbon may be not qualified.
  - The media may be not qualified.
  - Adjust the Darkness (heat temperature).
  - Slow down the print speed.

Recovery

In order to continue your print jobs after any abnormal conditions have been fixed, simply press the **CANCEL** button to restart the printer. Make sure that the LED indicators are illuminated and not blinking and remember to re-send your files.

B. MAINTENANCE

Before maintenance be sure to turn off the printer power.

1. Cleaning the thermal print head

   Turn off the printer, open the cover, print head module and remove the ribbon. Rub the print head with a cotton swab that has been moistened with isopropyl alcohol. Check for any traces of black color or adhesive on the cotton after cleaning. Repeat if necessary until the cotton swab is clean after it is passed over the head. Many commercially available print head cleaning kits are also available.

Note: *The print head should be cleaned at least every time the ribbon is replaced and more often depending on actual usage and conditions.*

2. Cleaning the roller

   Using a cotton swab moistened with isopropyl alcohol, clean the roller so that no residue from label adhesive is visible.

Note: *The roller should be cleaned whenever you notice a build-up of dust or label adhesives.*

3. Cleaning the media compartment

   Clean the media compartment with a soft cloth moistened with a mild detergent.

   Every time a media roll is printed this compartment should be cleaned to reduce the incidence of dust, which can affect print quality.

Appendix A: Command Language Quick Reference

This section lists all internal software commands for the printer if you are installing it in a "legacy" application in which a specific printer programming language is being used. For more information please refer to the Programmer's Manual, available separately from the factory or your Authorized Reseller. This section does not apply if you are using the printer with the included Windows-compatible driver and Windows application software.

A. COMMAND SET FOR PPLA

The following commands are for Printer Programming Language A.

System Setting Commands

These commands will cause related parameters to be saved in the permanent storage, E2PROM. The parameters will be stored unless they are changed by commands or a reset from the front panel.

Command	Description	Parameter	Factory default
<STX>KI4*n*	Media empty check	*n:* '0' - disable '1' - enable.	enabled
<STX>KI7*n*	Set ribbon mode	*n:* '0' – DT, '1' – TT.	TT with ribbon
<STX>KI8*n*	Set baud rate	*m:* '0' – 9600, '1' – 600, '2' – 2400, '3' – 19200, '4' – 4800, '5' – 38400, '6' – 1200, '7' – 9600.	9600 baud.
<STX>KI;1	Select alternate Control codes	!KI;0 - selects standard control codes.	
<STX>KX*nnnn*	Set continuous label length	*nnnn:* a 4-digit number, in mm	Valid under Windows driver Label Dr.

(Table continued from previous page)

Command	Description	Parameter	Factory default
<STX>KI<*m*	Set symbol set for ASD smooth font set	*m:* '0' - USASCII, '1' - United Kingdom, '2' - Spanish, '3' - Swedish, '4' - French, '5' - German, '6' - Italian, '7' - Danish/ Norwegian.	0 for USASCII

Interaction Commands

These commands only apply to the serial port and allow the host to understand the status and configuration of the printer.

Command	Description	Response	Contents
<SOH>#	Reset	Y	<XOFF><XON>T
<SOH>A	Send a readable status string	Y	<8 bytes, Y/N> <CR> byte 1 : Y - printer busy byte 2 : Y - paper out byte 3 : Y - ribbon out byte 4 : N (always) byte 5 : Y - printing byte 6 : Y - printer paused byte 7 : Y - label presented byte 8 : N (always)
<SOH>B	Toggle pause condition	N	
<SOH>E	Send the number of labels to be printed	Y	e. g. 0000<CR> no label left to be printed
<SOH>F	Send status byte	Y	*n*<CR> same as <SOH>A, except bit 1 ~ 8 are corresponding to byte 1 ~ 8 of <SOH>A.

Note: *Control codes for the printer commands.*

Symbol	Code (hexadecimal)
XON	11H
XOFF	13H
STX	02H
SOH	01H
ESC	1BH
LF	0AH
CR	0DH

Note: *There is no space code in each command.*

System Level Commands

Command	*Description*	*Remarks*
<STX>a	Enable page/job echo characters	
<STX>cxxxx	Set continuous paper length and disable edge sensor	
<STX>Dxxxxxxx	Memory dump**	xxxxxxx : memory address in HEX value
<STX>Exxxx	Set copy count for stored label	
<STX>e	Enable edge sensor	
<STX>F	Feed a page	
<STX>fxxx	Back feed from top position	
<STX>G	Print stored label	
<STX>I	Download graphics	either PCX, BMP, PCX or HEX format
<STX>J	Set pause for each label	
<STX>j	Cancel pause	
<STX>KQ	System configuration details	
<STX>L	Enter label formatting state	
<STX>Mxxxx	Set maximum label length	
<STX>m	Set measurement in metric	
<STX>n	Set measurement in inches	

(Table continued from previous page)

Command	*Description*	*Remarks*
<STX>Oxxxx	Set start of print position	
<STX>P	Enable data dump	
<STX>Q	Clear memory (fonts & graphics)	
<STX>r	Select reflective sensor	
<STX>S*n*	Set feed rate for motor	*n*: 'A', 'B' or 'C'
<STX>T	Print test pattern	
<STX>V*n*	Set cutter or dispenser configuration	*n*: '1' - enable cutter, '4' - enable dispenser
<STX>v	Printer version information	
<STX>W*n*	Graphics/fonts/labels and memory status details	*n*: 'G', 'F' or 'L'. through RS232
<STX>x	Release file from printer memory	

Formatting Commands

Command	**Description**
:xxxx	Set cut amount
An	Set print mode *n* : '1'- exclusive, '2' - transparent
Cxxxx	Set horizontal offset
cxx	Set cut amount
Dwh	Set pixel width and height
E	Form feed and return to system level command mode
G	Store previous data to global register
<STX>S*n*	Retrieve from global register. *n* : global register ID
Hxx	Set heating value, xx=01~20
M	Toggle the mirror mode
m	Set measurement in metric
n	Set measurement in inches
Pn	Set print speed. *n*='A', 'B', or 'C' **
Qxxxx	Set copy count

(Table continued from previous page)

Command	Description
Rxxxx	Set vertical offset
r<n..n>	Retrieve label data from printer buffer. <n..n> : label name
sm<n..n>	Save label data to printer buffer. m : memory module, <n..n> : label name
Txx	Set end-of-line code, xx : hex value
z	Change slash zero to normal zero (0).
+xx >xx	Make auto increment for numeric or alphanumeric, xx : count
-xx <xx	Make auto decrement for numeric or alphanumeric, xx : count
^xx	Set count amount, xx : count

Notes: *1. The formatting and editing commands should be grouped together, leaded by <STX>L and ended by E command*
***: The parameter ranges from 'A' to 'E' (1 ~ 4 ips)*

Editing Commands

Commands	Description
rthveeeyyyyxxxx<string><CR>	general format
r: print direction	'1','2','3' or '4' (rotation)
t: object type	'0' ~ '9' and ':' (fonts) **, 'A' ~ 'Z' and 'a' ~ 'z' (bar codes), 'X' (lines or boxes), 'Y' (graphics).
h: width multiplier	'1' ~ '9' and 'A' ~' O'. '0' stands for default.
v: height multiplier	'1' ~ '9' and 'A' ~' O', '0' stands for default.
eee: bar code height	This is ignored for box, line and graphics. It represents point size for font '9' and symbol set for Courier font**.
yyyy: Y coordinate	
xxxx: X coordinate	
<string>: depends on object types	

Object	*String*	*Description*
L : line (if t is 'X')	Lwwwhhh	www : width, hhh : height.
L : line (if t is 'X')	Lwwwwhhhh	wwww : width, hhhh : height.
B : box (if t is 'X')	Baaabbbcccddd	aaa : horizontal width bbb : vertical height ccc : thickness of top and bottom edges ddd : thickness of left and right bars
B : box(if t is 'X')	Baaaavvvvccccdddd	aaaa : horizontal width vvvv : vertical height cccc : thickness of top and bottom edges dddd : thickness of left and right bars
Bar code (if t is in the range 'A' ~ 'Z' or 'a' ~ 'z')	bar code data	The bar codes (and human readable text) will be printed according to the selected bar code type ('A' ~ 'Z' or 'a' ~ 'z').
Text (if t is in the range '0' ~ '9')	text data	Such text data will be printed according to the selected font ('0' ~ '9').
	file name	If t is 'Y' and the file was downloaded by <STX>I command.

Font Downloading Commands

The following commands are only used for soft fonts with PCL format.

Command	**Description**
ESC*c###D	assign the soft fonts ID number (### : 100 ~ 999)
ESC)s###W	Download font descriptor (### : length of font descriptor)
ESC*c###E	set character code (### : 1 ~ 255)
ESC(s###W	Download character descriptor and image (### : length of character descriptor and image)

B. COMMAND SET FOR PPLB

The following commands are for Printer Programming Language B.

All PPLB commands must be ended with <LF> or <CR>+<LF> codes. No spaces are allowed between parameters and leading command character.

Command	Description	Parameter
A*x,y,rot,font,hm, vm,nr,string*	Print text.	*font:* 1 ~ 5 for internal font and A ~ Z for soft font.
B*x,y,rot,bar,nw, ww,v,hum,string*	Print Bar Code. *bar:* barcode selection	*nw:* width of narrow bar *ww:* width of wide bar *v:* bar code height *hum:* B for printing readable code and N for disabling.
b*x,y,type,[…]*	Print 2D Bar Code	*type:* M for Maxi code and P for PDF 417
C*cn,dn,just,step,string*	Counter declaration	*cn:* counter index *dn:* digit number *just:* L,R,C and N for field justification *step:* step value
D*p1*	Heat setting	*p1:* density, 0 ~ 15
EI	Print soft font names	
Ek*string*	Delete soft font	*string:* soft font name or "*" to delete all soft fonts
ES*string, ….*	Download soft font	
FE	End form store	
FI	Print form names	
Fk*string*	Delete form	*string:* form name or "*" to delete all forms
Fs*string*	Execute form	*string:* form name
Fs*string*	Save form	*string:* form name
GG*x,y,string*	Print graphics	*string:* graphic name
GI	Print graphic list	
Gk*string*	Delete graphics	*string:* graphic name or "*" to delete all graphics
GM*string,size*<LF>…	Store graphics	*string:* graphic name size: graphic size in byte

(Table continued from previous page)

Command	Description	Parameter
I*p1,p2*,001	Select symbol set**	*p1:* 7 or 8 data bits *p2:* symbol set
JB JF	Disable back feed** Enable back feed**	
LE*x,y,hlen,vlen*	Line draw by exclusive	hlen: horizontal length vlen: vertical length
LO*x,y,hlen,vlen*	Line draw by OR	
LW*x,y,hlen,vlen*	Draw white line	
N	Clear frame buffer	
O[,C][,N][,D]	Select options	
P*p1*[,*p2*]	Print label	*p1:* label set number *p2:* copy number of each label
PA*p1*[,*p2*]	Print automatic	
Q*p1,p2*[,±*p3*]	Set label and gap length**	*p1*: label length *p2*: gap length *p3*: offset length
Q*w*	Set label width**	*w*: label width
R*x,y*	Set origin point**	
S*p1*	Set print speed	*p1*: speed value, 2~4
U	Print configuration	
UN US	Disable Error Report Enable Error Report	
V*vn,dn,just,string*	Define variable	*vn*: variable index *dn*: digit number *just*: L,R,C and N for field justification
X*x,y,thick,ex,ey*	Draw box	*ex, ey:* end position thick: line thickness
ZT ZB	Set print direction	*ZS:* print from top *ZB:* print from bottom
ZS ZN	Enable/disable store-to-Flash++	power-on default is ZN(disabled)
?	Download variables or counters	
d1,*hadj*	Set horizontal position adjustment**	*hadj:* adjustment in dots.
d2,*hadj*	Set horizontal position adjustment	same as d1, except it is no saved to E²PROM

Notes: *1. **x** and **y** stand for horizontal and vertical coordinate values.*
*2. **hm** and **vm** stand for horizontal and vertical multipliers.*
*3. **rot** is the rotation direction, its value is from 0 ~ 3.*
*4. **nr** is either N for normal printing or R for reverse printing.*
*5. **string** is bracket by double quote marks, e.g. "text".*
*6. ** Such commands will cause the printer to save parameters to permanent storage(E^2PROM).*
7. ZS takes effect only if optional flash memory board is installed.

Appendix B: Interface Specifications

A. INTRODUCTION

This section details the interface specifications of I/O ports for the printer. These specifications include pin assignments, protocols and detailed information about how to properly interface your printer with your host or terminal.

Serial

The RS232 connector on the printer side is a female DB-9.

Pin	Direction	Definition
1	In	DSR
2	In	RxData
3	Out	TxData
5	-	Ground
6	Out	DTR
7	Out	RTS
8	In	CTS
9	Out	+5V

Note: *Pin 9 is reserved for factory use only. Do not connect this pin if you are using a general host like a PC.*

Connection with host:

Host 25S (PC or compatible)	Printer 9P	Host 9S (PC or compatible)	Printer 9P
DTR 20	1 DSR	DTR 4	1 DSR
DSR 6	6 DTR	DSR 6	6 DTR
TX 2	2 RX	TX 3	2 RX
RX 3	3 TX	RX 2	3 TX
CTS 5	7 RTS	CTS 8	7 RTS
RTS 4	8 CTR	RTS 7	8 CTS
GND 7	5 GND	GND 5	5 GND

Alternatively you can just connect the 3 wires in the following way.

Host 25S (PC or compatible)	Printer 9P	Host 9S (PC or compatible)	Printer 9P
TX 2	2 RX	TX 3	2 RX
RX 3	3 TX	RX 2	3 TX
GND 7	5 GND	GND 5	5 GND
pin 4		pin 4	
pin 5		pin 6	
pin 6		pin 7	
pin 20		pin 8	

The most simple way to connect to other hosts (not PC compatible) or terminals is:

Printer	Terminal/Host
Pin 2- RxData	TxData
Pin 3- TxData	RxData
Pin 5- Ground	Ground

In general as long as the data quantity is not too large or you use Xon/Xoff as flow control, there will be no problem at all.

Baud rate:	2400, 4800, 9600, 19200 and 38400.
Data format:	always 8 data bits, 1 start bit and 1 stop bit.
Parity :	always non parity
Handshaking :	XON/XOFF as well as CTS/RTS (hardware flow control).

If you run an application with the bundled printer driver under Windows and use the serial port, you should check the above parameters and set the flow control to “Xon/Xoff” or “hardware”. However, a parallel connection is HIGHLY RECOMMENDED for connection to a Windows-based PC for best performance.

B. PARALLEL (CENTRONICS)

The parallel port is a standard 36-pin Centronics-type connection. Its pin assignments are listed as following.

Pin	Direction	Definition	Pin	Direction	Definition
1	In	/STROBE	13	Out	SELECT
2	In	Data 1	14,15		NC
3	In	Data 2	16	-	Ground
4	In	Data 3	17	-	Ground
5	In	Data 4	18		NC
6	In	Data 5	19~30	-	Ground
7	In	Data 6	31		NC
8	In	Data 7	32	Out	/Fault
9	In	Data 8	33~36	-	NC
10	Out	/ACK			
11	Out	BUSY			
12	Out	PE			

C. AUTO POLLING

Both the serial and parallel ports are active at the same time on this printer, so data can be received on either one, however no provision is made for port contention. If data is transmitted to both ports simultaneously, it will cause the data in the received buffer to be corrupted.

Appendix C: ASCII Table

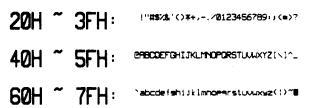
	0	1	2	3	4	5	6	7
0	NUL			0	@	P	`	p
1	SOH	XON	!	1	A	Q	a	q
2	STX		"	2	B	R	b	r
3		XOFF	#	3	C	S	c	s
4			$	4	D	T	d	t
5		NAK	%	5	E	U	e	u
6	ACK		&	6	F	V	f	v
7	BEL		'	7	G	W	g	w
8	BS		(	8	H	X	h	x
9			)	9	I	Y	i	y
A	LF		*	:	J	Z	j	z
B		ESC	+	;	K	[	k	{
C	FF		,	<	L	\	l	|
D	CR		-	=	M	]	m	}
E	SO	RS	.	>	N	^	n	~
F	SI	US	/	?	O	_	o	DEL

Appendix D: Fonts and Bar Codes for PPLA

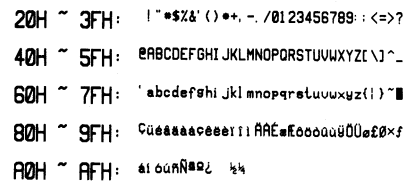
Internal Fonts

Fonts 0 ~ 8 have single symbol set.

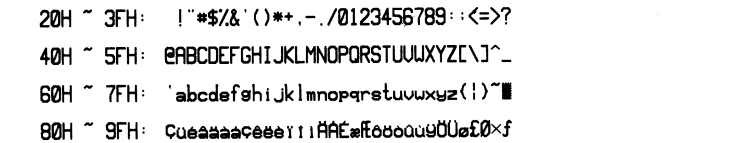
Font 0



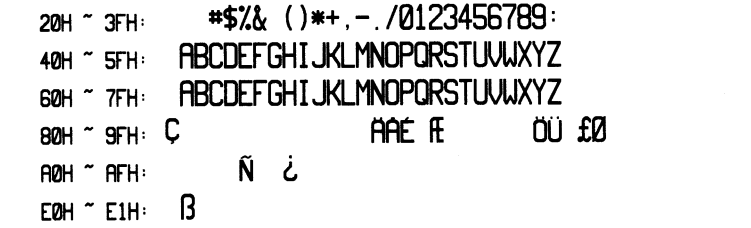
Font 1



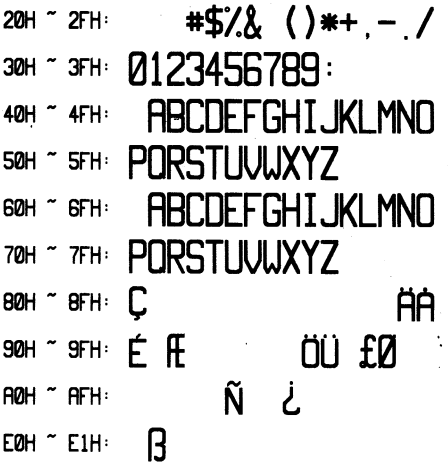
Font 2



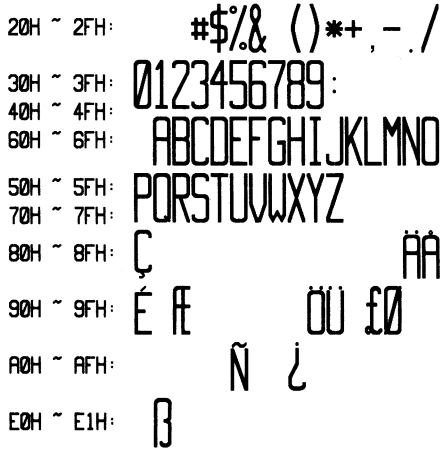
Font 3



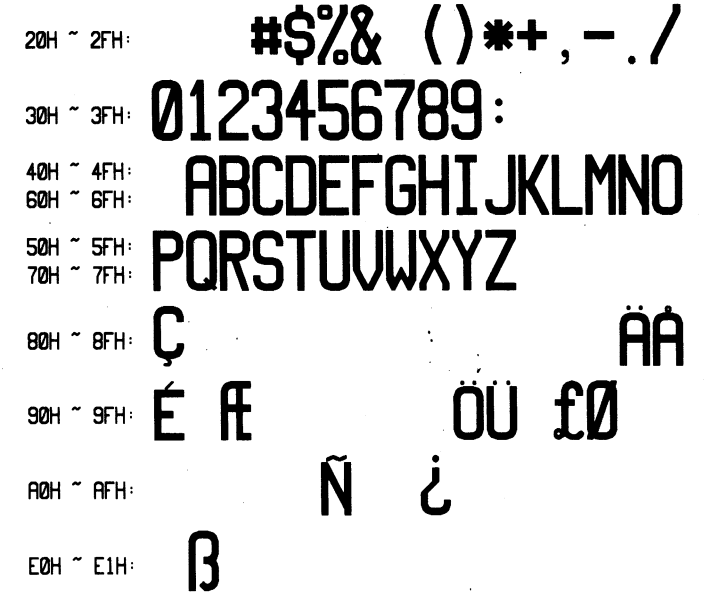
Font 4


20H ~ 2FH: #$%& ()*+,-./
30H ~ 3FH: 0123456789:
40H ~ 4FH: ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ
60H ~ 6FH: abcdefghijklmno
70H ~ 7FH: pqrstuvwxyz
80H ~ 8FH: Ç ÄÅ
90H ~ 9FH: É Æ ÖÜ £Ø
A0H ~ AFH: Ñ ¿
E0H ~ E1H: ß

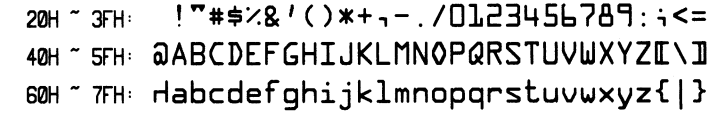
Font 5


20H ~ 2FH: #$%& ()*+,-./
30H ~ 3FH: 0123456789:
40H ~ 4FH:
60H ~ 6FH: abcdefghijklmno
50H ~ 5FH: PQRSTUVWXYZ
70H ~ 7FH:
80H ~ 8FH: Ç ÄÅ
90H ~ 9FH: É Æ ÖÜ £Ø
A0H ~ AFH: Ñ ¿
E0H ~ E1H: ß

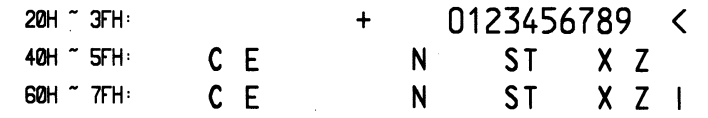
Font 6



Font 7



Font 8

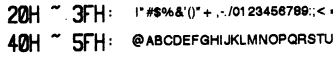


Font 9

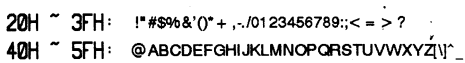
Font 9 (ASD smooth font set) includes 8 symbol sets, USASCII, UK, German, French, Italian, Spanish, Swedish, and Danish/Norwegian.

The sizes are 6, 8, 10, 12, 14 and 18 points.

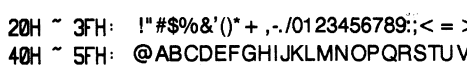
4 points



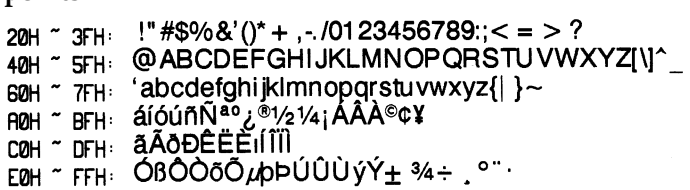
6 points



8 points



10 points



12 points

20H ~ 3FH: !"#$%&'()*+,-./0123456789:;<=>?
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[\]^_
60H ~ 7FH: ‘abcdefghijklmnopqrstuvwxyz{|}~
A0H ~ BFH: áíóúñÑªº¿®½¼¡ÁÂÀ©¢¥
C0H ~ DFH: ãÃðÐ�êËÈıÍÎÌ
E0H ~ FFH: ÓßÔÒõÕµþÞÚÛÙýÝ± ¾÷ ¸°¨·

14 points

21H ~ 3FH: !"#$%&'()*+,-./0123456789:;<=>‘
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[\]^_
60H ~ 7FH: ‘abcdefghijklmnopqrstuvwxyz{|}~
A0H ~ BFH: áíóúñÑªº¿®½¼¡ÁÂÀ©¢¥
C0H ~ DFH: ãÃðÐÊËÈıÍÎÌ
E0H ~ FFH: ÓßÔÒõÕµþÞÚÛÙýÝ± ¾÷ ¸°¨·

18 points

20H ~ 2FH: !"#$%&'()*+,-./
30H ~ 3FH: 0123456789:;<=>?
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[\]^_
60H ~ 6FH: ‘abcdefghijklmno
70H ~ 7FH: pqrstuvwxyz{|}~
A0H ~ AFH: áíóúñÑªº¿®½¼¡
B0H ~ BFH: ÁÂÀ©¢¥
C0H ~ CFH: ãÃ
D0H ~ DFH: ðÐÊËÈıÍÎÌ
E0H ~ EFH: ÓßÔÒõÕµþÞÚÛÙýÝ
F0H ~ FFH: ± ¾÷ ¸°¨·

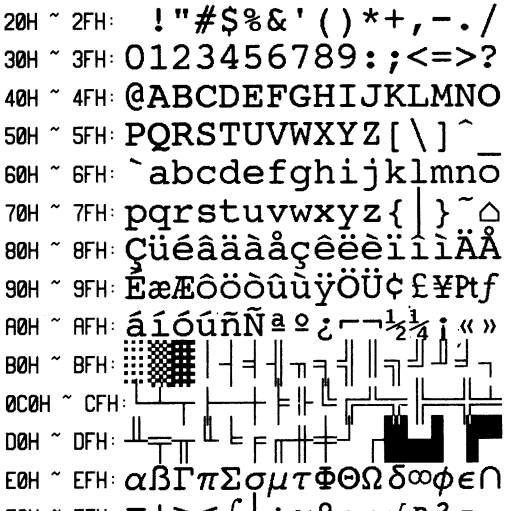
Roman-8

```
20H ~ 2FH:  !"#$%&'()*+,-./
30H ~ 3FH: 0123456789:;<=>?
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[\]^_
60H ~ 6FH: `abcdefghijklmno
70H ~ 7FH: pqrstuvwxyz{|}~▒
A0H ~ AFH: _ÀÂÈÊËÎÏ´`^¨˜ÙÛ£
B0H ~ BFH: ¯Ýý°ÇçÑñ¡¿¤£¥§ƒ¢
C0H ~ CFH: âêôûáéóúàèòùäëöü
D0H ~ DFH: ÅîØÆåíøæÄìÖÜÉïßÔ
E0H ~ EFH: ÁÃãÐðÍÌÓÒÕõŠšÚŸÿ
F0H ~ FFH: Þþ·µ¶¾—¼½ª º«■»±
```

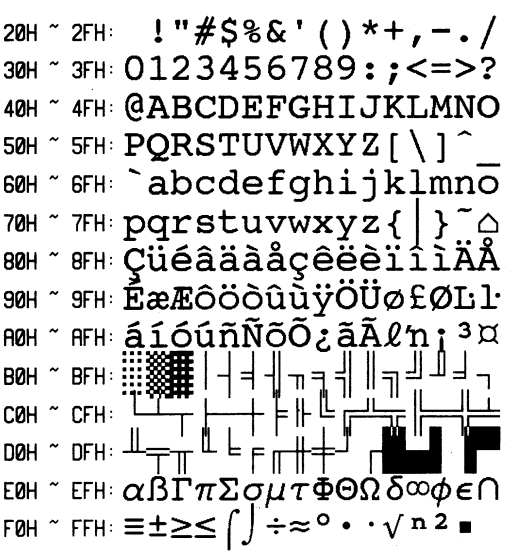
ECMA-94

```
20H ~ 2FH:  !"#$%&'()*+,-./
30H ~ 3FH: 0123456789:;<=>?
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[\]^_
60H ~ 6FH: `abcdefghijklmno
70H ~ 7FH: pqrstuvwxyz{|}~▒
A0H ~ AFH:  ¡¢£¤¥¦§¨©ª«¬-®¯
B0H ~ BFH: °±23´µ¶· 1º»¼½¾¿
C0H ~ CFH: ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏ
D0H ~ DFH: ÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞß
E0H ~ EFH: àáâãäåæçèéêëìíîï
F0H ~ FFH: ðñòóôõö÷øùúûüýþÿ
```

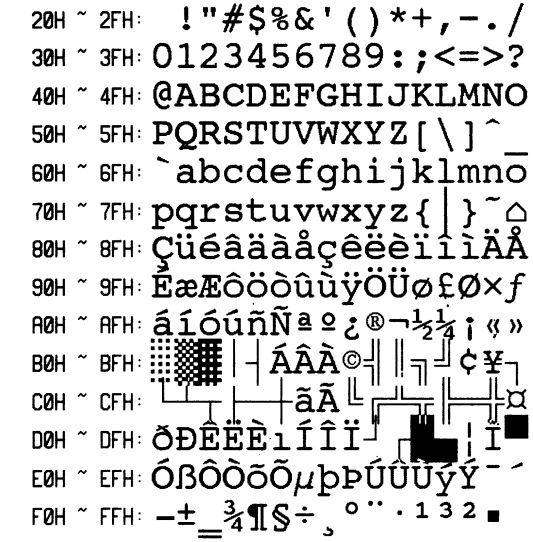
PC


20H ~ 2FH: !"#$%&'()*+,-./
30H ~ 3FH: 0123456789:;<=>?
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[\]^_
60H ~ 6FH: `abcdefghijklmno
70H ~ 7FH: pqrstuvwxyz{|}~⌂
80H ~ 8FH: ÇüéâäàåçêëèïîìÄÅ
90H ~ 9FH: ÉæÆôöòûùÿÖÜ¢£¥Pƒ
A0H ~ AFH: áíóúñÑªº¿⌐¬½¼¡«»
B0H ~ BFH:
0C0H ~ CFH:
D0H ~ DFH:
E0H ~ EFH: αßΓπΣσμτΦΘΩδ∞φϵ∩
F0H ~ FFH: ≡±≥≤⌠⌡÷≈°∙·√ⁿ²■

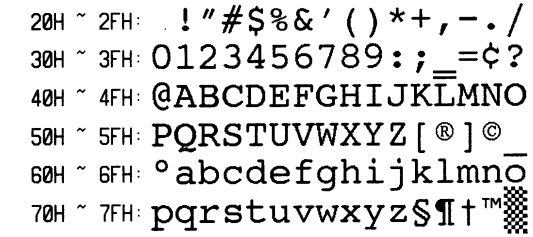
PC-A


20H ~ 2FH: !"#$%&'()*+,-./
30H ~ 3FH: 0123456789:;<=>?
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[\]^_
60H ~ 6FH: `abcdefghijklmno
70H ~ 7FH: pqrstuvwxyz{|}~⌂
80H ~ 8FH: ÇüéâäàåçêëèïîìÄÅ
90H ~ 9FH: ÉæÆôöòûùÿÖÜø£ØL·l·
A0H ~ AFH: áíóúñÑõÕ¿ãÃℓn¡³¤
B0H ~ BFH:
C0H ~ CFH:
D0H ~ DFH:
E0H ~ EFH: αßΓπΣσμτΦΘΩδ∞φϵ∩
F0H ~ FFH: ≡±≥≤⌠⌡÷≈°∙·√ⁿ²■

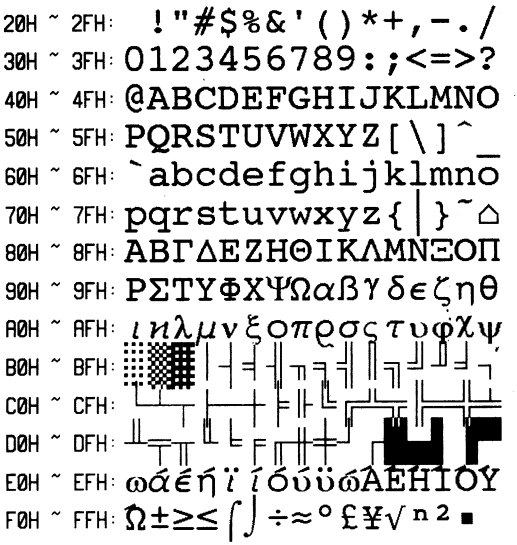
PC-B


20H ~ 2FH: !"#$%&'()*+,-./
30H ~ 3FH: 0123456789:;<=>?
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[\]^_
60H ~ 6FH: `abcdefghijklmno
70H ~ 7FH: pqrstuvwxyz{|}~⌂
80H ~ 8FH: ÇüéâäàåçêëèïîìÄÅ
90H ~ 9FH: ÉæÆôöòûùÿÖÜø£Ø×ƒ
A0H ~ AFH: áíóúñÑªº¿®¬½¼¡«»
B0H ~ BFH: ÁÂÀ©¢¥
C0H ~ CFH: ãÃ¤
D0H ~ DFH: ðÐÊËÈıÍÎÏ¦Ì
E0H ~ EFH: ÓßÔÒõÕµþÞÚÛÙýÝ¯´
F0H ~ FFH: -±‗¾¶§÷¸°¨·¹³²■

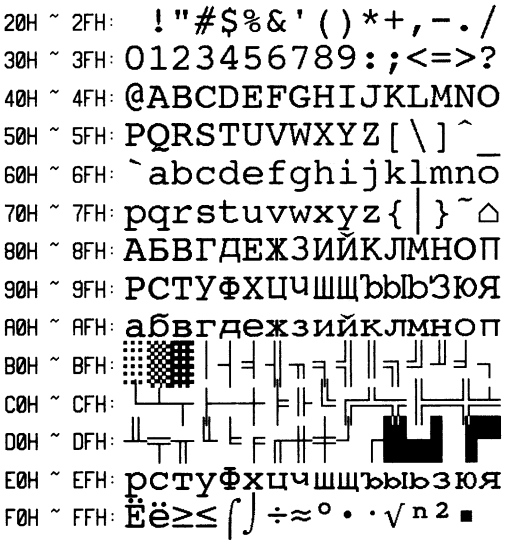
Legal


20H ~ 2FH: !"#$%&'()*+,-./
30H ~ 3FH: 0123456789:;‗=¢?
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[®]©_
60H ~ 6FH: °abcdefghijklmno
70H ~ 7FH: pqrstuvwxyz§¶†™

Greek



Russian



Internal Bar Codes

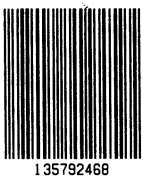
This PPLA supports 20 one dimensional bar codes and 2 two dimensional bar codes.

BAR CODE A : 3 OF 9

BAR CODE B : UPC-A

BAR CODE C : UPC-E

BAR CODE D :
INTERLEAVED 2 OF 5



BAR CODE E :
CODE 128

BAR CODE F : EAN-13

BAR CODE G : EAN-8

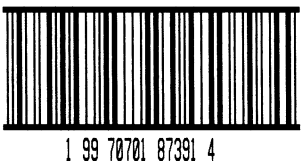
BAR CODE H : HBIC

CODA BAR
BAR CODE I

BAR CODE J : I25
WITH CHECKSUM

BAR CODE K :
PLESSEY

BAR CODE L : I25
WITH CHECKSUM &
BEARER



BAR CODE M : UPC2

BAR CODE N : UPC5

BAR CODE P :
POSTNET

BAR CODE O :
CODE 93

BAR CODE Q
: UCC/EAN
128

BAR CODE R
: UCC/EAN
128 K

BAR CODE T :
TELEPEN

BAR CODE V :
FIM

BAR CODE U :
MAXICODE

BAR CODE Z :
PDF-417

Appendix E: Fonts and Bar Codes for PPLB

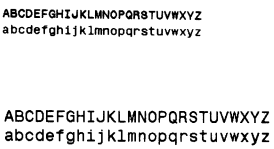
Internal Fonts

There are 5 internal fonts for the PPLB emulation.

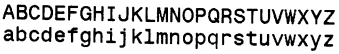
Each has 6 eight-bit and 9 seven-bit symbol sets. Font 5 does not contain any lower-case characters.

8 bit symbol sets	code page 437, 850, 852, 860, 863 and 865
7 bit symbol sets	USA, British, German, French, Danish, Italian, Spanish, Swedish and Swiss

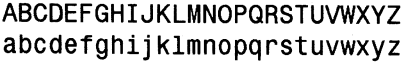
Font 1



Font 2



Font 3



Font 4

Font 5

Symbol Set

```
Code Page 437
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£  ƒ
A0-BF: áíóúñÑªº¿  ½¼¡
E0-FF:  ß     µ                    ·


Code Page 850
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜø£Ø ƒ
A0-BF: áíóúñÑªº¿  ½¼¡       ÁÂÀ     ¢
C0-DF:       ãÃ          ÊËÈ ÍÎÏ     Ì
E0-FF: ÓßÔÒõÕµ  Ú Ù      =¾¶§  ·


Code Page 852
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâäÇ ë  î Ä É  ôö    ÖÜ
A0-BF: áíóú                  ÁÂ
C0-DF:                      Ë  ÍÎ
E0-FF: ÓßÔ      Ú           §  ·


Code Page 860
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâãàÁçêÊèÍÔìÃÂÉÀÈôõòÚùÌÕÜ¢£Ù Ó
A0-BF: áíóúñÑªº¿Ò ½¼
E0-FF:  ß     µ                    ·


Code Page 863
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâÂà¶çêëèïî=À§ÉÈÊôËÏûú ÔÜ¢£Ù ƒ
A0-BF:   óú    Î  ½¼¾
E0-FF:  ß     µ                    ·
```

```
Code Page 865
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜø£Ø ƒ
A0-BF: áíóúñÑªº¿  ½¼
E0-FF:  ß     µ


USASCII
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz


UK
20-3F:  !"£$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz


German
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: §ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ^_
60-7F: `abcdefghijklmnopqrstuvwxyzäöüß


French
20-3F:  !"£$%&'()*+,-./0123456789:;<=>?
40-5F: àABCDEFGHIJKLMNOPQRSTUVWXYZ°ç§^_
60-7F: `abcdefghijklmnopqrstuvwxyzéùè¨


Danish
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZÆØÅÜ_
60-7F: `abcdefghijklmnopqrstuvwxyzæøåü


Italian
20-3F:  !"£$%&'()*+,-./0123456789:;<=>?
40-5F: §ABCDEFGHIJKLMNOPQRSTUVWXYZ°çé^_
60-7F: ùabcdefghijklmnopqrstuvwxyzàòèì
```

```
Spanish
20-3F:  !"!$%&'()*+,-./0123456789:;<=>?
40-5F: ¡ABCDEFGHIJKLMNOPQRSTUVWXYZÑñ¿ü_
60-7F: áabcdefghijklmnopqrstuvwxyzéíóú


Swedish
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: ÉABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÅÜ_
60-7F: éabcdefghijklmnopqrstuvwxyzäöåü


Swiss
20-3F:  !"£$%&'()*+,-./0123456789:;<=>?
40-5F: §ABCDEFGHIJKLMNOPQRSTUVWXYZàçè^_
60-7F: `abcdefghijklmnopqrstuvwxyzäöüé
```

Internal Bar Codes

The PPLB supports 26 one-dimensional bar codes and 2 two dimensional bar codes.

** Code 39 **

** Code 93 **

** Code 128UCC shipping container **

** Code 128 **

** Codabar **

** EAN-8 **

** EAN-8 2 add-on **

** EAN-8 5 add-on **

** EAN-13 **

** EAN-13 2 add-on **

** EAN-13 5 add-on **

** German postcode **

** Int 2 of 5 **

0123456789

** Postnet **

** UCC/EAN **

(12)3456789

** UPC-A **

1 35790 24680 9

** UPC-A 2 add-on **

6 76908 93489 3 59

** UPC-A 5 add-on **

5 98676 12761 4 83754

** UPC-E **

0 438959 0

** UPC-E 2 add-on **

0 432328 0 32

** UPC-E 5 add-on **

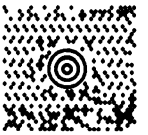
0 438959 0 09274

** UPC I25 **

1 23 45678 90122 4

** Maxi Code **

** PDF-417 **



Appendix F: Specifications

Printer Specifications

Resolution	203 DPI (8 dots/mm)
Print method	Direct thermal and thermal transfer
Maximum print speed	1 to 4 inches (25.4mm to 101.6mm) per second
Maximum print width	4.09 in (104mm)
Maximum print length	45 in. (1143 mm)
Onboard RAM	512K bytes
Onboard Flash	512K bytes
Maximum label roll diameter	8 in.(203 mm) outside diameter 1.5 in. to 3.0 in.(38 mm to 76 mm) inside diameter
Label indexing	Black stripe and gap
Ribbon types	Wax, Wax/Resin and Resin
Ribbon size	OD 3 in. (75mm) ID 1 in. (25mm)
IO Interface	RS-232 serial and Centronics parallel ports Auto- polling for both ports.
Dimension	9.8"W x 16"D x 10.2"H (250mmW x 410mmD x 260mmH)
Weight	26.8 lbs. (12kg)
Electrical	CE, UL, CUL, FCC class A 110/220 VAC +10%, 50/60 Hz
Operating temperature	40° to 140°F (4° to 38°C)
Storage temperature	-40° to 140°F (-40° to 60°C)
Humidity	15 to 85% RH
Windows driver	Win 95, 98, 2000 and NT
Printer emulation	PPLA or PPLB
Firmware management	Upgradeable from PC
Media type	Roll-feed, die-cut, continuous, fan-fold, tags, ticket in thermal paper or plain paper.
Front panel	3 buttons 3 LED indicators
Rear panel	Parallel and serial I/F Power switch

Appendix G: Specifications for Internal Fonts, Bar Codes and Graphics

NOTE: *If you are connecting your printer to a Windows-based PC, this section does not apply. However, if you are connecting the printer to a host-based system using a "legacy" programming language, this section will be useful in understanding how to make the printer compatible using one of the two built-in programming languages.*

Two distinct printer programming languages - PPLA and PPLB - are built into Cyclone. Each has a different definition for fonts, barcodes and graphics. These programming languages enable your host to communicate with the label printer and perform many functions.

Printer Programming Language A, PPLA

Specification	
General fonts	7 alpha-numeric fonts, OCR A and OCR B
ASD smooth fonts	6, 8, 10, 12, 14 and 18 points
Symbol sets for smooth fonts	USASCII, UK, German, French, Italian, Spanish, Swedish, and Danish/Norwegian
Courier fonts	8 symbol sets (PC, PC-A, PC-B, EAMA-94, Roman , Legal, Greek and Russian)
Soft fonts	Downloadable PCL fonts
Font expandability	1x1 to 24x24
Bar code types	Code 39, Code 93, Code 128/subset A,B,C, Codabar, Interleave 2 of 5, UPC A/E/2 and 5 add-on, EAN-8/13, UCC/EAN-128, Postnet, Plessey, HBIC, Telepen and FIM. MaxiCode and PDF417 (2D symbologies).
Graphics	PCX, BMP, IMG and HEX formats

Printer Programming Language B, PPLB

Specification	
General fonts	5 fonts with different point sizes
Symbol sets (Code pages)	8 bits: code page 437, 850, 852, 860, 863 and 865. 7 bits: USA, British, German, French, Danish, Italian, Spanish, Swedish and Swiss.
Soft fonts	Downloadable soft fonts
Font expandability	1x1 to 24x24
Bar code types	Code 39(checksum), Code 93, Code 128/subset A,B,C, Codabar, Interleave 2 of 5(checksum), Matrix 25, UPC A/E 2 and 5 add-on, EAN-8/13, Code 128UCC, UCC/EAN, Postnet, German Postcode. MaxiCode and PDF417 (2D symbologies).
Graphics	PCX and binary raster

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